



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/528,794

03/23/2005

Osamu Ishigami

SHM-15962

9163

40854

7590

11/14/2007

RANKIN, HILL, PORTER & CLARK LLP

38210 Glenn Avenue

WILLOUGHBY, OH 44094-7808

EXAMINER

ZHENG, LOIS L

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

11/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,794	Applicant(s) ISHIGAMI ET AL.	
	Examiner Lois Zheng	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/23/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1 and 3-9 are currently under examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heimann et al. US 2003/0034095 A1(Heimann) in view of Kovacs et al. US 5,211,663(Kovacs).

Heimann teaches a method of treating metal surfaces, such as steel surfaces, to form a protective coating(abstract, paragraphs [0018-0019]), wherein the treatment method comprises immersing a metal surface in a treatment solution having a pH of about 9 to about 13(paragraph [0022]) and introducing oxygen gas via bubbling during the treatment process(paragraph[0033]). Heimann further teaches that the pH of the treatment bath is controlled and maintained(paragraph [0022]). The temperature of the treatment bath in the process of Heimann is in the range of about 50 to about 100°C(paragraph [0024]).

Regarding claim 1, even though Heimann does not explicitly teach its metal treatment process to be applied to the claimed stainless steel member, one of ordinary skill in the art would have found it obvious to have applied the metal treatment process

of Heimann to the claimed stainless steel member with expected success since Heimann teaches that its metal surface treatment method can be applied to steel surfaces which encompasses the claimed stainless steel member. In addition, the control and maintenance of the pH level in the treatment solution as taught by Heimann implies the claimed addition of pH buffer or the claimed provision of pH buffer action.

However, Heimann does not explicitly teach the claimed air bubbling.

Kovacs teaches a passivation method for treating metal surfaces such as stainless steel(abstract). Kovacs further teaches that the passivation solution may be oxygenated by bubbling with air or oxygen to improve the passivation process(col. 5 lines 52-54).

Therefore, it would have been obvious to one of ordinary skill in the art to have oxygenated the treatment solution of Heimann by bubbling with air as taught by Kovacs with expected success since Kovacs teaches bubbling with air or oxygen are functionally equivalent techniques to oxygenate the passivation solution to improve passivation process. In addition, since Heimann in view of Kovacs teach the claimed air bubbling and the claimed pH buffer, the claimed increasing amount of dissolved oxygen to promote the formation of hydroxide and the claimed suppression of falling pH are inherently taking place in the process of Heimann in view of Kovacs.

Furthermore, the pH and the coating temperature as taught by Heimann in view of Kovacs overlap the claimed pH and the claimed coating temperature. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed pH and the claimed coating temperature ranges from the disclosed ranges of Heimann

in view of Kovacs would have been obvious to one skilled in the art since Heimann in view of Kovacs teach the same utilities in their disclosed pH and coating temperature ranges.

Regarding claim 3, Heimann further teaches the claimed drying step in a temperature ranged from about 120 to about 150°C(paragraph [0034]).

Regarding claim 4, even though Heimann in view of Kovacs do not explicitly teach that the stainless steel member is a separator for fuel cell, one of ordinary skill in the art would have found it obvious to apply the metal surface treatment process of Heimann in view of Kovacs to a stainless steel member used for any purposes including the claimed separator in a fuel cell.

4. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani et al. US 2003/0162077 A1(Ohtani) in view of Fukui et al. US 6,440,598 B1(Fukui), and further in view of Heimann.

Ohtani teaches a method for making stainless steel separator for use in a fuel cell comprising pressing the stainless steel sheet to form gas flow and cooling water passages and subjecting the press-formed separator to passivation treatment to form a passivation layer on the surface of the stainless steel separator(abstract, paragraphs [0005, 0009, 0024]).

However, Ohtani does not explicitly teach the claimed application of lubricant and the claimed cleaning, rinsing, passivation using an alkaline solution and drying steps.

Fukui teaches also teaches a process for the manufacturing of separators for use in a fuel cell(abstract). Fukui further teaches that the workability of the metal material

during press-forming can be improved by applying a lubricant onto the surface of the material(col. 2 lines 27-63).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the use of a lubricant as taught by Fukui into the separator manufacturing process of Ohtani in order to improve the workability of the press-forming step as taught by Futui.

The teachings of Heimann are discussed in paragraph 3 above. In addition, Heimann teaches that its passivation process can be preceded by pre-treatments such as cleaning and/or rinsing steps and the cleaning step can be an alkaline treatment step(paragraph [0031-0032]). Furthermore, Heimann teaches that the passivated and heat treated metal surface can be rinsed and dried again(paragraph [0033]).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the passivation process, including the pre-treatment and post-treatment steps, as taught by Heimann into the passivation step in the separator manufacturing process of Fukui in order to improve corrosion resistance of the metal surface as taught by Heimann.

Regarding claim 5, the separator manufacturing process as taught by Ohtani in view of Fukui and Heimann is substantially similar to the separator manufacturing process as claimed(i.e. substantially the same press-forming, alkaline cleaning, washing/rinsing, passivation, rinsing and thermal drying steps). In addition, Heimann further teaches that the treatment solution can be applied by spraying(paragrpah

[0031]). Therefore, the instantly claimed process does not Distinguish from the process of Ohtani in view of Fukui and Heimann.

Regarding claims 6-8, the instant claims are rejected for the same reasons as stated in the rejection of claims 1 and 3 above.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtani in view of Fukui and Heimann, and further in view of Vashi US 4,497,667(Vashi).

The teachings of Ohtani in view of Fukui and Heimann are discussed in paragraph 4 above. However, Ohtani in view of Fukui and Heimann do not explicitly teach the alkaline cleaning solution comprises adding a surfactant to a basic salt as claimed.

Vashi teaches a highly alkaline cleaning comprising basic salts and surfactant (abstract, col. 2 lines 26-66, col. 3 lines 31-48).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the alkaline cleaning solution as taught by Vashi into the alkaline cleaning step in the process of Ohtani in view of Fukui and Heimann in order to provide effective cleaning and conditioning of the metal surface prior to subsequent coating treatment as taught by Vashi(col. 2 lines 12-16).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

Application/Control Number:
10/528,794
Art Unit: 1793

Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LLZ


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700